

WHAT IS CLAIMED IS:

1. A process for producing a heat mode-compatible positive planographic printing plate precursor comprising a support and a photosensitive layer whose solubility in an aqueous alkali solution increases upon heat-mode exposure, comprising the steps of:

applying a photosensitive layer coating solution onto the support; and

drying the photosensitive layer coating solution at a drying temperature not less than 150°C and not greater than 200°C and for a drying time of 110 seconds or less,

wherein

the photosensitive layer coating solution is obtained by dissolving or dispersing a photosensitive composition in a solvent;

the photosensitive composition contains a polymer insoluble in water but soluble in an aqueous alkali solution;

the solvent comprises a low-boiling solvent with a boiling point of 130°C or less and a high-boiling solvent with a boiling point of greater than 130°C; and

the residual solvent in the photosensitive layer is 5% by weight or less relative to the weight of the photosensitive layer.

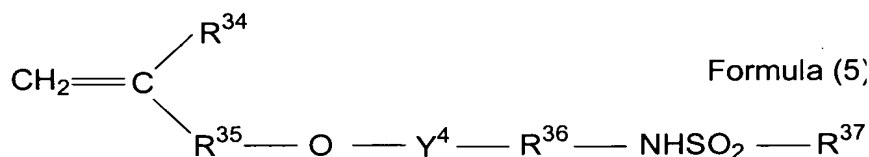
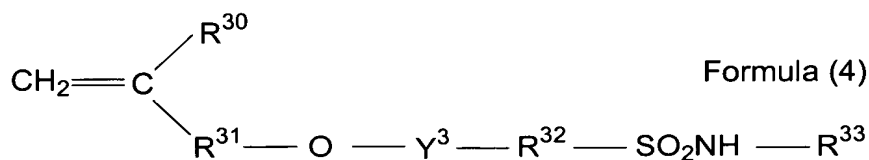
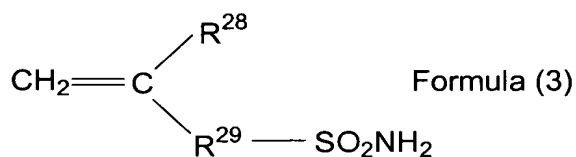
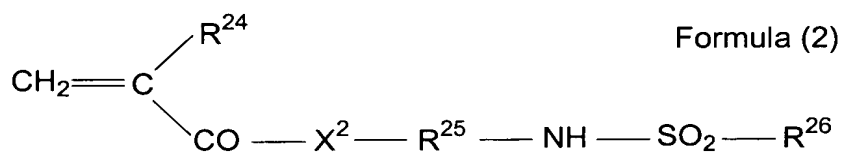
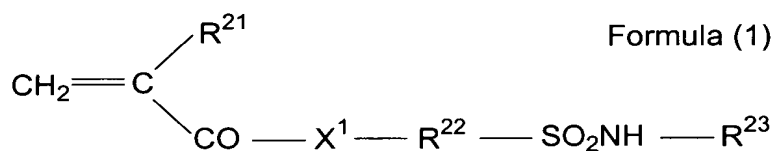
2. The process of claim 1, which further comprises the step of drying the photosensitive layer coating solution at a drying temperature of less than 150°C.

3. The process of claim 1, wherein the residual solvent in the photosensitive layer is 4% by weight or less relative to the weight of the photosensitive layer.

4. The process of claim 1, wherein the polymer insoluble in water but soluble in an aqueous alkali solution has sulfonamide groups or active imide groups on the main chain or side chains thereof as acidic groups.

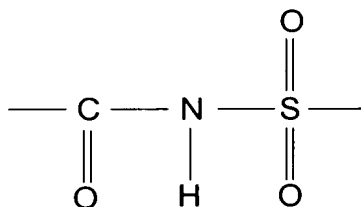
5. The process of claim 1, wherein the solvent is at least one selected from the group consisting of methanol, ethanol, isopropanol, dioxolane, 1-methoxy-2-propanol, ethylacetate, and γ -butyrolactone.

6. The process of claim 1, wherein the polymer insoluble in water but soluble in an aqueous alkali solution is mainly constituted by at least one monomer selected from those represented by following formulae (1) to (5):



wherein X^1 and X^2 each represents -O- or -NR²⁷; R^{21} and R^{24} each represents a hydrogen atom or -CH₃; R^{22} , R^{25} , R^{29} , R^{32} and R^{36} each represents an alkylene group having 1 to 12 carbon atoms, cycloalkylene group, arylene group or aralkylene group which may have a substituent group; R^{23} , R^{27} and R^{33} each represents a hydrogen atom, an alkyl group having 1 to 12 carbon atoms, cycloalkyl group, aryl group or aralkyl group which may have a substituent group; R^{26} and R^{37} each represent an alkyl group having 1 to 12 carbon atoms, cycloalkyl group, aryl group, or aralkyl group which may have a substituent group; R^{28} , R^{30} , and R^{34} represent a hydrogen atom or -CH₃; R^{31} and R^{35} each represents an alkylene group having 1 to 12 carbon atoms, cycloalkylene group, arylene group or aralkylene group which may have a single bond or a substituent group; and Y^3 and Y^4 each represents a single bond or -CO-.

7. The process of claim 1, wherein the polymer insoluble in water but soluble in an aqueous alkali solution has active imide groups represented by the following formula on the main chain or side chains thereof as acidic groups:



8. The process of claim 1, wherein the polymer insoluble in water but soluble in an aqueous alkali solution is mainly constituted by N-(p-aminosulfonyl phenyl) methacrylamide or N-(p-aminosulfonyl phenyl) acrylamide.

9. A process for producing a heat mode-compatible positive planographic printing plate precursor comprising a support and a photosensitive layer whose solubility in an aqueous alkali solution increases upon heat-mode exposure, comprising the steps of:

applying a photosensitive layer coating solution onto the support; and

drying the photosensitive layer coating at a reduced pressure of 30 mmHg or less,

wherein

the photosensitive layer coating solution is obtained by dissolving or dispersing a photosensitive composition in a solvent;

the photosensitive composition contains a polymer insoluble in water but soluble in an aqueous alkali solution; and

the residual solvent in the photosensitive layer is 5% by weight or less relative to the weight of the photosensitive layer.

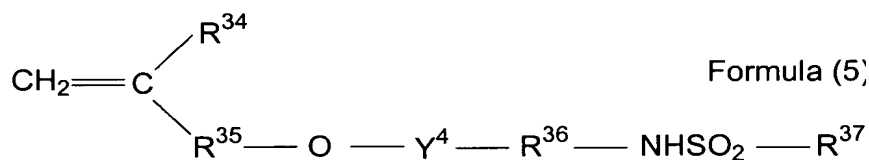
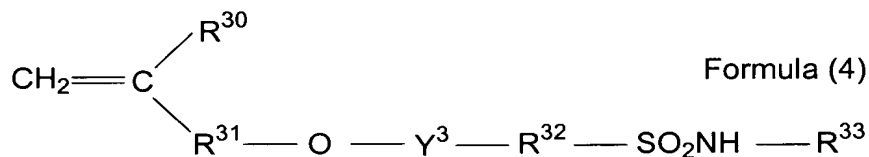
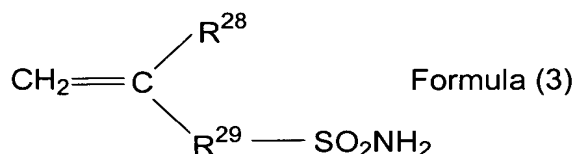
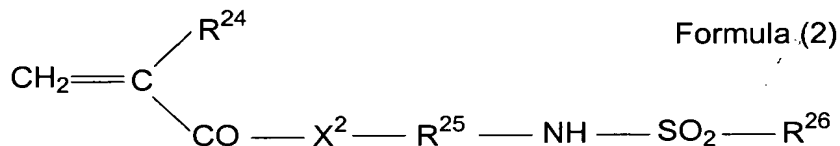
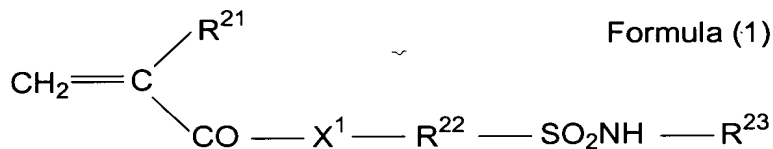
10. The process of claim 9, which further comprises the step of drying the photosensitive layer coating solution at a normal pressure.

11. The process of claim 9, wherein the residual solvent in the photosensitive layer is 4% by weight or less relative to the weight of the photosensitive layer.

12. The process of claim 9, wherein the polymer insoluble in water but soluble in an aqueous alkali solution has sulfonamide groups or active imide groups on the main chain or side chains thereof as acidic groups.

13. The process of claim 9, wherein the solvent is at least one selected from the group consisting of methanol, ethanol, isopropanol, dioxolane, 1-methoxy-2-propanol, ethylacetate, and γ -butyrolactone.

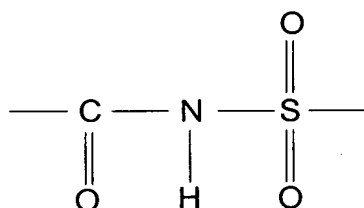
14. The process of claim 9, wherein the polymer insoluble in water but soluble in an aqueous alkali solution is mainly constituted by at least one monomer selected from those represented by following formulae (1) to (5):



wherein X^1 and X^2 each represents -O- or -NR²⁷; R²¹ and R²⁴ each represents a hydrogen atom or -CH₃; R²², R²⁵, R²⁹, R³² and R³⁶ each represents an alkylene group having 1 to 12 carbon atoms, cycloalkylene group, arylene group or aralkylene group which may have a substituent group; R²³, R²⁷ and R³³ each represents a hydrogen atom, an alkyl group having 1 to 12 carbon atoms, cycloalkyl group, aryl group or aralkyl group which may have a substituent group; R²⁶ and R³⁷ each represent an alkyl group having 1 to 12 carbon atoms, cycloalkyl group, aryl group, or aralkyl group which may have a substituent group; R²⁸, R³⁰, and R³⁴

represent a hydrogen atom or -CH_3 ; R^{31} and R^{35} each represents an alkylene group having 1 to 12 carbon atoms, cycloalkylene group, arylene group or aralkylene group which may have a single bond or a substituent group; and Y^3 and Y^4 each represents a single bond or -CO- .

15. The process of claim 9, wherein the polymer insoluble in water but soluble in an aqueous alkali solution has active imide groups represented by following formula on the main chain or side chains thereof as acidic groups:



16. The process of claim 9, wherein the polymer insoluble in water but soluble in an aqueous alkali solution is mainly constituted by N-(p-aminosulfonyl phenyl)methacrylamide or N-(p-aminosulfonyl phenyl) acrylamide.